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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,942	06/27/2003	Huong Chung Yew	11317-P004	8681

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EXAMINER

VINH, LAN

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 05/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/607,942

Applicant(s)

YEW, HUONG CHUNG

Examiner

Lan Vinh

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 31-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-20, 23-26, 29 and 30 is/are rejected.
- 7) ☒ Claim(s) 8, 21, 22, 27 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 070603.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, claims 1-30 in the reply filed on 4/18/2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1- 11, 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the upper and lower layers". There is insufficient antecedent basis for this limitation in the claim. Claims 2-11 are indefinite because they depend on claim 1

Claim 29 recites the limitation "data obtained" in claim 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-7, 9-11, 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Chhagan et al (US 6,277,716)

Chhagan discloses a method of fabricating a gate stack with an endpoint system, the gate stack comprises a SiN layer/first material underlying an BARC layer/second material (fig. 1-2). The method comprises the steps of:

determining the total emission intensity wavelength of the SiN layer/first material layer (col 6, lines 20-25)

determining the total emission intensity wavelength of the BARC layer/second material layer (Table 2 ; fig. 3)

plotting the scalar of the wavelength differential of the BARC/upper and SiN/lower layers (fig. 3)

choosing the highest peak of wavelength differential as the best range of end detection wavelength (Table 2; fig. 3)

Regarding claim 2, fig. 3 shows that the SiN/first material and BARC/second material layers have endpoint emission wavelengths that is close each other.

The limitations of claims 3-4 have been discussed above

Regarding claims 5-7, Chhagan discloses using a low pressure etching recipe includes Chlorine and oxygen to etch the gate stack (Table 2)

Regarding claims 9-10, Chhagan discloses using photodetector in the etch tool measure light intensity (col 6, lines 11-14)

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Regarding claim 11, Chhagan discloses that the etcher has photodetectors that monitor the progress of the etches and observing/recording the change in the emission (col 5, lines 47-49)

Regarding claim 29, Chhagan discloses the step of forming an overlying layer atop the SiN layer, forming a patterned image on the overlying layer by protecting the area not to be etched, etching the exposed area to form the patterned structure (col 5, lines 45-54)

5. Claims 12-20; 23-26, 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Chhagan et al (US 6,277,716)

Chhagan discloses a method of fabricating a gate stack with an endpoint system, the gate stack comprises a SiN layer/lower material underlying an BARC layer/upper material (fig. 1-2). The method comprises the steps of:

Chhagan discloses a method of fabricating a gate stack with an endpoint system, the gate stack comprises a SiN layer/first material underlying an BARC layer/second material (fig. 1-2). The method comprises the steps of:

determining the total emission intensity wavelength of the SiN layer/lower material layer (col 6, lines 20-25)

determining the total emission intensity wavelength of the BARC layer/upper material layer (Table 2 ; fig. 3)

plotting the scalar of the wavelength differential of the BARC/upper and SiN/lower layers (fig. 3)

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choosing the highest peak of wavelength differential as the best range of end detection wavelength (Table 2; fig. 3)

etching the BARC/upper layer using the wavelength chosen as endpoint detection (Table 2; fig. 3)

Regarding claim 13, Chhagan discloses forming a patterned layer 30 on the upper layer (col 5, lines 39-40)

Regarding claim 14, Chhagan discloses that the etcher has photodetectors that monitor the progress of the etches and observing/recording the change in the emission (col 5, lines 47-49)

Regarding claim 15, fig. 3 shows that the SiN/first material and BARC/second material layers have endpoint emission wavelengths that is close each other.

The limitations of claims 16-17 have been discussed above

Regarding claims 18-20, Chhagan discloses using a low pressure etching recipe includes Chlorine and oxygen to etch the gate stack (Table 2)

Regarding claims 23-25, Chhagan discloses that the etcher has photodetectors that monitor the progress of the etches and observing/recording the change in the emission, determining the end point of the etch using optical emission detection system (col 5, lines 47-55)

Regarding claim 26, Chhagan discloses detecting the end point when etching a gate stack having a thickness of 500-3500 angstroms (col 7, lines 10-15)

Regarding claim 30, Chhagan discloses the step of forming an overlying layer atop the SiN layer, forming a patterned image on the overlying layer by protecting the area

not to be etched, etching the exposed area to form the patterned structure (col 5, lines 45-54)

Allowable Subject Matter

6. Claim 8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 21, 22, 27-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



LV
May 11, 2005